

AMENDMENTS TO THE SPECIFICATION

Kindly amend the specification as follows:

Please insert before line 1 of page 1 the following:

REFERENCE TO RELATED APPLICATIONS

Cross-reference is made to the following related patent applications:

(1) The present application is a continuation of U.S. Serial No. 08/478,488, filed June 7, 1995, which is a continuation of U.S. Serial No. 08/360,014, entitled "Hand-Held Data Capture System With Interchangeable Modules," filed December 20, 1994 in the names of Koenck et al., which is a continuation of U.S. Serial No. 07/777,393, entitled "Hand-Held Data Capture System With Interchangeable Modes," filed January 7, 1992 in the names of Koenck et al., now U.S. Patent No. 5,410,141, which is the U.S.A. national phase of International Application No. PCT/US/90/03282, entitled "Hand-Held Data Capture System With Interchangeable Modules" with an International Filing Date of June 7, 1990 in the names of Steven E. Koenck et al., and is a continuation-in-part of U.S. Serial No. 07/364,902, entitled, "Modular Hand-Held System Capable of Bar Code Scanning and On-Line RF Transmission of Scanning Data", filed June 8, 1989 in the names of Arvin D. Danielson, and Darald R. Schultz, now abandoned, and of U.S. Serial No. 07/364,594, entitled "Hand-Held Computer Terminal" filed June 7, 1989 in the names of Keith K. Cargin et al., now abandoned.

(2) The present application is also a continuation-in-part of U.S. Application Serial No. 08/040,313, entitled "Pocket Size Data Capture Unit With Processor and Shell Modules", filed March 29, 1993, which is a continuation-in-part of U.S. Application Serial No. 07/451,322, entitled "Core Computer Processor Module, and Peripheral Shell Module Assembled to Form a Pocket Size Data Capture Unit" filed December 15, 1989 in the names of Arvin A. Danielson

and Dennis A. Durbin, now U.S. Patent No. 5,227,614, which is a continuation-in-part of U.S. Application Serial No. 07/143,921, entitled "Core Computer Processor Module, and Peripheral Shell Module Assembled to Form a Pocket Size Data Capture Unit" filed January 14, 1988 in the names of Arvin A. Danielson and Dennis A. Durbin, now abandoned.

(3) U.S. Application Serial No. 07/707,954, entitled "Hand-Held Computerized Data Collection Terminal with Rechargeable Battery Pack Sensor and Battery Power Conservation", filed May 22, 1991 in the names of Keith K. Cargin et al., now abandoned.

(4) U.S. Application Serial No. 07/339,330, entitled "Hand-Held Computer Terminal" filed April 14, 1989 in the names of Keith K. Cargin et al., now abandoned.

(5) Serial No. 06/897,547, entitled "Core Computer Processor Module, and Peripheral Shell Module Assembled to Form a Pocket Size Data Capture Unit" in the names of Dennis A. Durbin, Stephen J. Kelley, et al. filed August 15, 1986, now abandoned.

(6) U.S. Serial No. 07/744,813, entitled "Modular Hand-Held System Capable of Bar code Scanning And On-line RF Transmission of Scanning Data", filed August 12, 1991 in the names of Arvin D. Danielson and Darald R. Schultz, now abandoned.

On page 10, kindly delete the second paragraph, beginning at line 11 with "Referring to FIG. 2, the top ..." and ending on page 11, line 13 with "bar code reading device" and substitute the following:

Referring to FIG. 2, the top end of the terminal 10 may be enclosed with a removable end cap 18. End cap 18 is attached with two screws 64 to housing part 12. When installed on terminal 10, end cap 18 overlies and encloses opening 65 and cavity 63. Located on, and part of the end cap 18 may be a multiple pin D-sub type connector 19, which may in turn be direct or hard wired via a flexible multi-conductor ribbon type cable 20 to a connector platform 21, on

which may be mounted two connector receptacles 22 and 23. Cable 20, connector platform 21 and connector receptacles 22 and 23 may also be mounted on and be part of end cap 18. Screws such as 24, FIG. 2, may secure parts 21, 22, 23 in a precise location with only connectors 22, 23 projecting beyond the confines of the end cap housing. The multiple pin D-sub connector 19 may provide a communications port capable of the two-way transfer of data with other compatible devices according to the RS-232C standard as defined by the Electronic Industries Association. When end cap 18 is installed on terminal 10, receptacles 22 and 23 automatically mate with a plurality of pins 67 and 68 which protrude through connector blocks 69 and 70. Pins 67 and 68, and connector blocks 69 and 70 are each attached or connected to peripheral controller board 26. In a preferred embodiment of the invention, the end cap 18 may be removable using common hand tools. Alternatively, a plain type of end cap housing which does not contain a D-sub connector 19 or any of its associated components such as 20-23, may be used in place of end cap 18. In addition, peripheral controller board 26 provides the electronic circuitry required to interface the two-way data transfer which may occur through D-sub connector 19. In a preferred embodiment, controller board 26 may be a peripheral type device which may be exchanged or otherwise configured ~~to enable~~ to enable the use of various types of end cap devices. These various end cap devices may enable terminal 10 to perform a wide variety of functions not currently possible with existing hand held data capture devices including, but in no way limited to, the two-way transfer of data through space using radio frequency waves as the data carrying medium, the two-way transfer of data over telephonic communication links, and the two-way transfer of data between the terminal and a bar code reading device.

On page 20 at line 6 kindly delete the second paragraph beginning “Referring to block diagram of FIG. 9, ...” and ending on line 30 with “controller card 26 to radio module 106” and substitute the following:

Referring to the block diagram of FIG. 9, it can be appreciated that radio module 106 houses transmitter 202 which is coupled to antenna 104. Transmitter 202 is coupled to transmit level adjust circuitry 204. Receiver 206 is coupled to antenna 104 and to receive level adjust circuitry 208. Dashed line A separates the components located on radio module 106 from components located on peripheral controller card 26. Control microprocessor 212 communicates with main microprocessor ~~74~~ 216, FIG. 3, of housing part 11 through coupling means 214 which ~~is provided~~ is provided by connectors 86, 87, FIG. 2. Control microprocessor 212 is coupled to transmitter 202 and receiver 206 by coupling means ~~216~~ 215 along which are communicated radio control signals. Data to be transmitted is received from processing unit ~~74~~ 216, FIG. 3, and is forwarded by control microprocessor 212 over TX data line 218 to modulation generator and limiter component 220. Modulation generator and limiter component 220 is coupled to first low pass filter 222. Data received by antenna 104 is delivered to control microprocessor 212 on RX data line 223 which couples control microprocessor 212 to data recovery element 224 which is coupled to a second low pass filter 226. Lines 108a and 108b and also lines ~~216~~ 215 are part of ribbon cable 108 and serve to couple the circuitry of peripheral controller card 26 to radio module 106.

On page 21, kindly delete the second paragraph beginning on line 2 with “In operation, the user may remove ...” and ending on line 31 with “observed by the user” and substitute the following:

In operation, the user may remove modular adaptor end cap 118 from housing parts 11 and 12 when adjustment of radio components is desired. Adjusting elements 114 (FIG. 8) may be accessed by the separation of housing members 116 and 117 (FIG. 7) while radio module 106 continues to be electrically connected with peripheral controller components on card 26 through ribbon cable 108. In addition, peripheral control adjustment elements 115 (FIG. 8) of peripheral controller card 26 (FIG. 2) may be accessed when end cap 118 is removed from housing parts 11 and 12. The user may communicate with a remote host computer in “real time” by operation of keyboard 14 which provides signals to main microprocessor 74216 (FIG. 9). Main microprocessor 74216 processes the signals and communicates them to control microprocessor 212 of peripheral ~~controller card~~ controller card 26. Control microprocessor 212 and its associated circuitry on peripheral controller card 26 processes the signals to superimpose them upon radio transmission frequencies, and communicates the processed signals to transmitter 202 which is coupled to antenna 104 and which thereby causes their transmission through space from antenna 104 by electromagnetic radiation. A remote host computer responding to terminal 110 transmits radio frequency signals which are received by receiver 206 through antenna 104. Received signals are processed on peripheral controller card 26 and are provided to control microprocessor 212 which communicates the processed signals to main microprocessor 74216. Microprocessor 74216 displays the received information upon display 13 so that it can be observed by the user.

On page 22, kindly delete the second paragraph, line 3 beginning “Since the signals transmitted across the digital ...” and ending on line 20 with “battery drain” and substitute the following:

Since the signals transmitted across the digital interface are at standardized logic levels, there is no need for tuning adjustment of the RF module to adapt it to a particular basic terminal. The lines ~~216~~215, 218 and 223 may form part of a ribbon cable corresponding to cable 108 with a connector corresponding to connector 109 for plug-in coupling with a mating connector of radio module 106-1. Multiconductor line 228 may be implemented via mating connectors such as 67, 22 and 68, 23 (FIG.2) as in the previous embodiments. In each embodiment, power from the battery pack 28 may be supplied to the circuitry of the RF end cap under the control of a radio on/off switch 252, the power supply path 254, FIG. 10, being comprised by conductors of a ribbon cable such as 108, for example. The control microprocessor 212 is coupled with switch component 252 as indicated at 256, so that all power to the RF end cap can be switched on and off as required to minimize battery drain.

On page 22, kindly delete the paragraph beginning on line 36 with “To replace the modular adaptor ...” and ending on page 23 at line 3 with “223, 254, FIG. 10” and substitute the following:

To replace the modular adaptor end cap 118-1 with the RF module 106-1, the end cap is removed as in FIG. 8, and the RF section 106-1 separated at connector 109, FIG. 8. A new end cap is then coupled with ribbon cable 108 by means of connector corresponding to 109. This completes the new digital signal paths which are as represented at ~~216~~215, 218, 223, 154, FIG. 10.